Two New Single-island Endemic Species of *Haliophyle* Warren (Lepidoptera: Noctuidae) from Moloka‘i and O‘ahu

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Abstract. *Haliophyle* Warren is an endemic Hawaiian genus of noctuid moths, the larvae of which feed exclusively on ferns; the adults of many species are bright red, orange, or pink. We describe two new species of ‘orange-type’ *Haliophyle* endemic to the islands of Moloka‘i and O‘ahu: *Haliophyle maio,* **sp. nov.** Paynter-Tavares & Austin (Moloka‘i) and *Haliophyle maipahi,* **sp. nov.** Paynter-Tavares & Austin (O‘ahu). This brings the total of described *Haliophyle* to ten, but more undescribed species are known in collections. The newly described species are likely sister species but differentiated by conspicuous differences in the male genitalia and subtle differences in patterns on the forewing. *Haliophyle maipahi* is likely extinct given it has not been collected in 60 years. We provide annotated figures of wing pattern elements and genitalia of both sexes to facilitate future work on *Haliophyle*.

Key words: Endemic, extinct, Hawai‘i, morphology, taxonomy

The genus *Haliophyle* Warren (Noctuidae: Noctuinae), with eight described species, is endemic to the Hawaiian Islands. Early systematists associated *Haliophyle* with genera currently placed in Eriopygini (Hampson 1905) and Leucaniini (Meyrick 1899), but *Haliophyle* is no longer associated with these genera, and its tribal placement remains uncertain. *Haliophyle* feed on ferns (Swezey 1954, Zimmerman 1958), an unusual but not unprecedented habit in Noctuidae (Hendrix 1980, Fuentes-Jacques et al. 2021), with most fern-feeding noctuids in the subfamily Noctuinae (Keegan et al. 2021). *Haliophyle* also bear a likeness to *Fagitana* Walker and *Leucosigma* Druce, two other fern-feeding noctuid genera (Goldstein et al. 2019). *Haliophyle* are known prey for the endangered Hawaiian hoary bat, ‘ōpe‘ape‘a, *Lasirus cinereus semotus* (Allen 1890) (Fullard 2001, Ranker 2016), and can be some of the most abundant native macromoths in native Hawaiian wet forests (KAA pers. obs.). Fullard (2001) suggested that close association with low-lying ferns is linked to auditory insensitivity in *Haliophyle euclidias* (Meyrick 1899) and is a potential non-auditory predation defense akin to strategies such as reduced inclination to fly in response to stimuli (Morrill and Fullard 1992) or temporal isolation by diurnal flight (Surlykke et al. 1998) that are known to be used by earless species.

Little taxonomic work has focused on *Haliophyle* apart from original species descriptions (see Table 1). The first four species of *Haliophyle* were described in 1899 and originally placed in *Leucania* Ochsenheimer: *H. anthracias* (Meyrick

Table 1. List of described species of *Haliophyle* with authorship, year last seen, source, type locality, and additional notes where applicable.

Species	Authorship	Last seen	Source	Distribution	Notes
H. anthracias	(Meyrick 1899)	2024	UHIM	Maui	
H. compsias	(Meyrick 1899)	2024	UHIM	Hawai‘i	
H. connexa	Zimmerman 1958	1935	BPBM	Hawai‘i	1, 4
H. euclidias	(Meyrick 1899)	2025	UHIM	Kaua‘i	2
H. ferruginea	(Swezey 1932)	2025	UHIM	Maui	
H. flavistigma	Zimmerman 1958	2025	UHIM	Maui (type locality), Moloka‘i	4
H. ignita	Zimmerman 1958	2024	UHIM	Hawai‘i	4
H. maio	Paynter-Tavares & Austin 2026	2021	UHIM	Moloka‘i	
H. maipahi	Paynter-Tavares & Austin 2026	1965	UHIM	O‘ahu	3
H. niphadopa	(Meyrick 1899)	2023	UHIM	Hawai‘i	

1. Likely just an unusual color morph of a more widespread, extant Hawai‘i island species.
2. Records of this species on islands other than Kaua‘i (e.g., Swezey 1954) represent misidentifications of other species of *Haliophyle*.
3. Possibly extinct.
4. Because these three names were originally described as “aberrations,” the authorship should be attributed to Zimmerman (1958), per ICZN Article 10.2 (ICZN 1999) as originally pointed out by Riotte (1991).

1899), *H. compsias* (Meyrick 1899), *H. euclidias*, and *H. niphadopa* (Meyrick 1899). *Haliophyle euclidias* was subsequently transferred to *Eriopygodes* Hampson and the other three species to *Hyssia* Guenée (Hampson 1905), an action later strongly criticized by Meyrick (1911). Four “aberrations” of *H. euclidias* were also recognized by Hampson (1905), three of which were proposed by Warren (1912), but raised to species by Zimmerman (1958): *H. ignita* Zimmerman, 1958; *H. flavistigma* Zimmerman, 1958; and *H. connexa* Zimmerman, 1958. The fourth “aberration” (*Eriopygodes euclidias* ab. *depupillata* Strand 1916) was later synonymized with *H. flavistigma* by Zimmerman (1958). Warren (1912) established *Haliophyle* for these Hawaiian species and suggested a relationship to New Zealand’s endemic genus *Alysia* Guenée (now a synonym of *Ichneutica* Meyrick). The most recently described *Haliophyle* was *H. ferruginea* (Swezey 1932), described almost a century ago and originally placed in *Aletia* Hübner. Zimmerman (1958) brought attention to Warren’s genus name as it had gone unnoticed by entomologists in Hawai‘i until then but was skeptical of the proposed relationship with *Alysia* (misattributed as *Alysina* Cockerell); he also transferred *H. ferruginea* to *Haliophyle*. Zimmerman (1958) wrote that *Haliophyle* is “…in the process of active evolution,” with many remaining undescribed species, and contended that the “red species” *H. euclidias, H. ignita, H. flavistigma,* and *H. connexa* form an especially difficult species complex due to their lack of known differentiating external characters. However, despite external similarities, males of many species possessed highly distinctive genitalia that can be used to identify species (Zimmerman 1958).

After this early work, no species were described from O'ahu or Moloka'i, despite several undescribed species being known from each (Zimmerman 1958). Many species are sympatric, which adds a layer of complexity to the evolutionary and biogeographical history of this group. This lack of known consistent, distinguishable external morphological characters and presence of overlapping geographical ranges makes *Haliophyle* an especially difficult radiation to study and one for which basic species descriptions are a first step. To this end, we identified two undescribed species which are relatively distinct that we describe here in hopes of facilitating future interest in this remarkable and beautiful group of native Hawaiian moths.

Materials and Methods

Dissection methods follow Landry (2007); genitalia were stained with a combination of Eosin Y and chlorazol black and then slide-mounted in euparal. Photography of adults and genitalia was done with a Macroscopic Solutions Macropod Pro and Canon EOS R camera body using the Macro Photo MP-E 65 mm f/2.8 1–5× manual focus lens for EOS. Images were stacked using Zerene Stacking Software v1.04. Figures were brightened to be accurate to the specimens' true appearance, cropped, and annotated using Affinity Designer v1.10.8 (2019). Data from Beardsley (1980), Giffin (2003, 2007), and Austin and Rubinoff (2024) were used to compile a list of all described species of *Haliophyle*, including information on authorship, type locality, date of most recent collection, distribution, and additional notes where necessary (Table 1). Label data was transcribed verbatim. Corrections to Hawaiian spelling and diacritics and SI conversions of imperial units are denoted in brackets. Separate lines within labels are separated by semicolons; separate labels on a specimen are denoted by slashes (/).

Morphological terminology for the head and legs follows Zimmerman (1958). General wing pattern terminology follows Lafontaine (1987), with additional terms adopted from Schmidt and Anweiler (2020). Morphological terminology of abdomen and genitalia follows Schmidt and Anweiler (2020), however ampullae are referred to as "claspers." Forewing length was measured from the base of the costa to the apex of the wing (excluding fringe) to the nearest tenth of a millimeter.

Specimens from the following collections were examined:

BPBM Bernice Pauahi Bishop Museum, Honolulu, HI, USA

UHIM University of Hawai'i Insect Museum, Honolulu, HI, USA

Results

***Haliophyle maipahi,* sp. nov.** Paynter-Tavares & Austin

Figs 1A, B; 2A; 3A

https://zoobank.org/NomenclaturalActs/9f686348-9f9b-4e11-b82c-c1594de8a0c8

Diagnosis. *Haliophyle maipahi,* **sp. nov.**, is very similar to *H. maio*, **sp. nov.** Externally, it can be distinguished based on its smaller size (forewing length 14.2–15.0 mm), whereas *H. maio* is considerably larger (forewing length 16.4–16.7 mm). In addition, the shape of the fused antemedial and postmedial line at the posterior margin of the forewing differs between the two species. In *H. maipahi*, the antemedial and postmedial line extends from the costal margin and join at vein 1A+2A to form a subquadrate area that does not reach the posterior margin (Fig. 1A, B). In *H. maio*, they join at the posterior margin to form a subtriangular area (Fig. 1C, D). In the male genitalia of *H. maipahi* (Fig. 2A), the clasper is apically acute compared

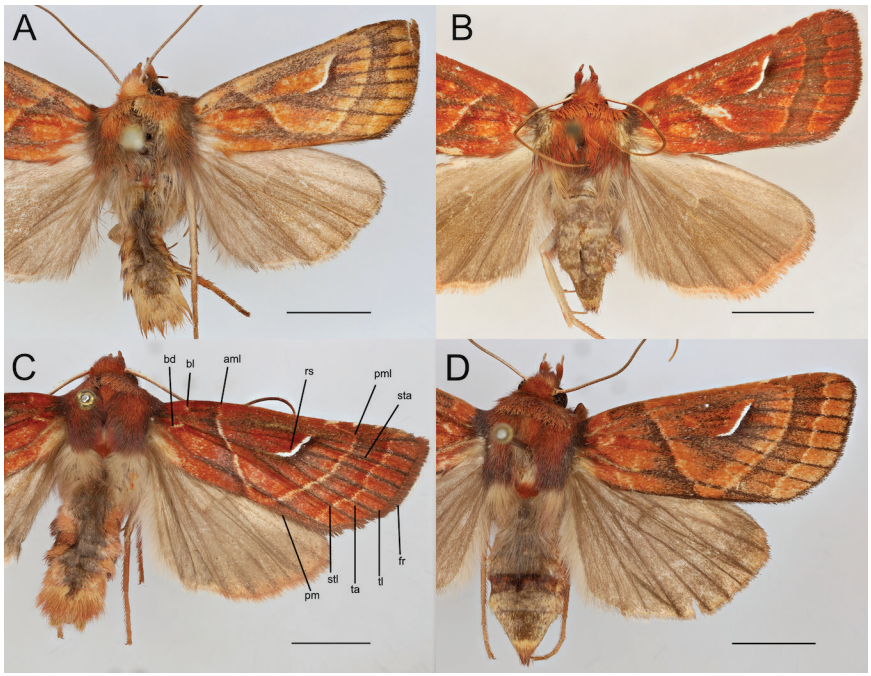

Figure 1. *Haliophyle* adults. Scalebar = 5 mm. **A.** *H. maipahi*, ♂, holotype (UHIM). **B.** *H. maipahi*, ♀, paratype (BPBM). **C.** *H. maio*, ♂, holotype (UHIM). **D.** *H. maio*, ♀, paratype (UHIM). Abbreviations: *bl*, basal line; *aml*, antemedial line; *rs*, reniform spot; *pml*, postmedial line; *sta*, subterminal area; *stl*, subterminal line; *ta*, terminal area; *fr*, fringe; *pm*, posterior margin.

to the distinctly furcated clasper of *H. maio* (Fig. 2B). Female genitalia of the two species are exceedingly similar, but the anterior setae are situated annularly on the papillae anales in *H. maipahi* (Fig. 3A) as opposed to the setae's roughly latitudinal linear arrangement of *H. maio* (Fig. 3B). However, with so few female specimens known, it is difficult to know the variability of this character.

Type material. Holotype. O'ahu: ♂, Mt. Ka[']ala; V-2-65 / UHIM2015.23017 (UHIM).

Paratypes (2 ♂♂, 1 ♀). O'ahu: 1♂, T[erritory of]. H[awai'i].; Mar[ch] 1915 / UHIM2015.23016 / K.A. Austin diss. #1469 (UHIM). 1♂, [same data as previous] / UHIM2015.23014 (UHIM). O'ahu: 1 ♀, M[oun]t. Ka[']ala; IV-2-38 / JM Valentine; Collector / BPBMENT; 1000004597 (BPBM).

Description. Male (n=3). ***Head.*** Vertex with undercoat of pale-yellow shaggy scales, reddish-orange at their apices. Frons covered with concolorous scales as vertex, but with more prominent reddish-orange and less apparent pale-yellow scales. Antenna filiform, pale yellowish-orange, ca. 0.8× length of forewing; sensillae present ventrally, porrect, ca. 2× length of dorsal scales. Scape with off-white and pale-orange scaling. Inter-ommatidial setae present, ocellus present. First and second segment of labial palpus entirely covered in shaggy, rusty-orange scales with scattered brownish-grey coloration. Second segment length ca. 2× that of width, upcurved

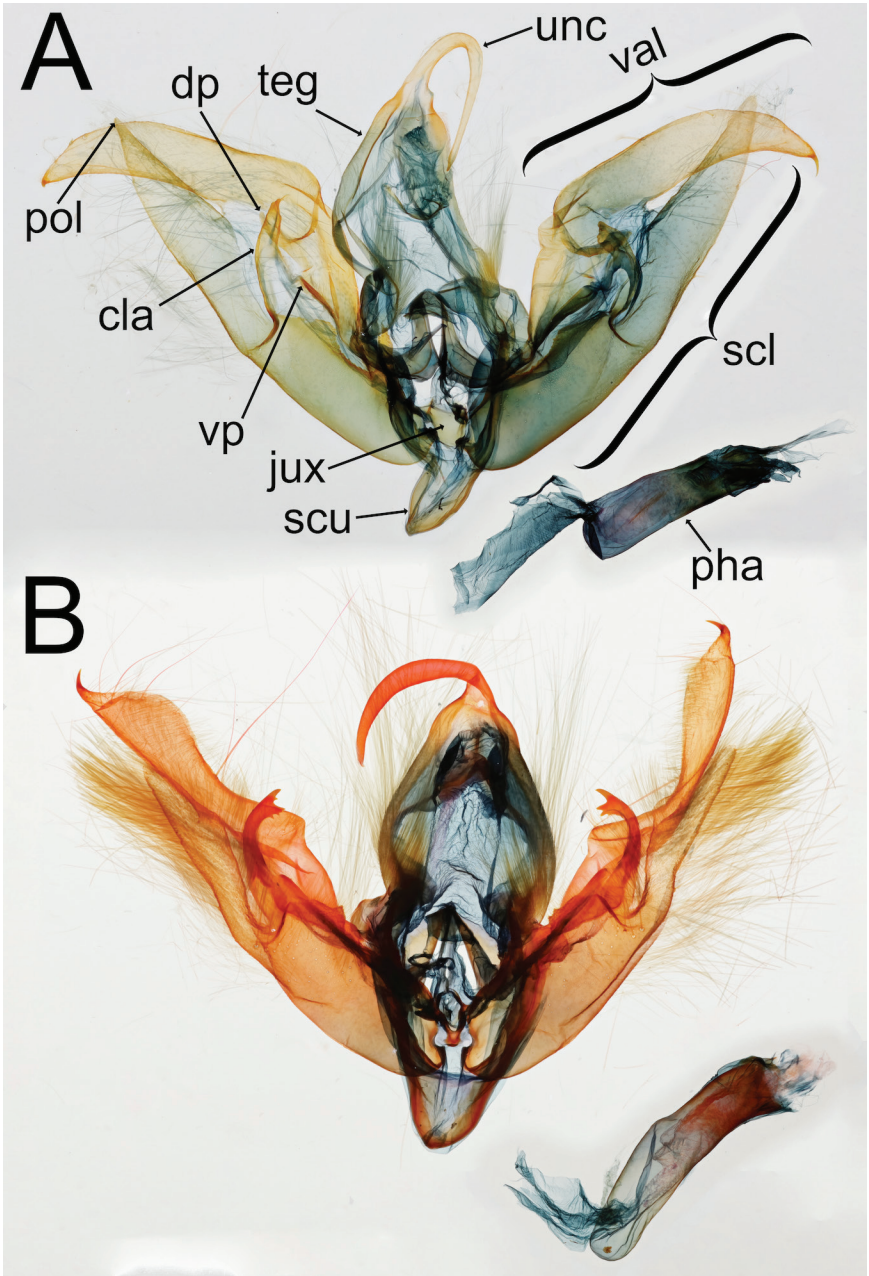

Figure 2. Male genitalia. **A.** *Haliophyle maipahi*, paratype. K.A. Austin diss. #1469 (UHIM). **B.** *H. maio*, paratype. K.A. Austin diss. #1433 (UHIM). Abbreviations: *unc*, uncus; *teg*; tegumen; *val*, valva; *cla*, claspers; *pol*, pollex; *scl*, sacculus; *scu*, saccus; *jux*, juxta; *dp*, dorsal process; *vp*, ventral process; *pha*, phallus. Phallus inset, not to scale.

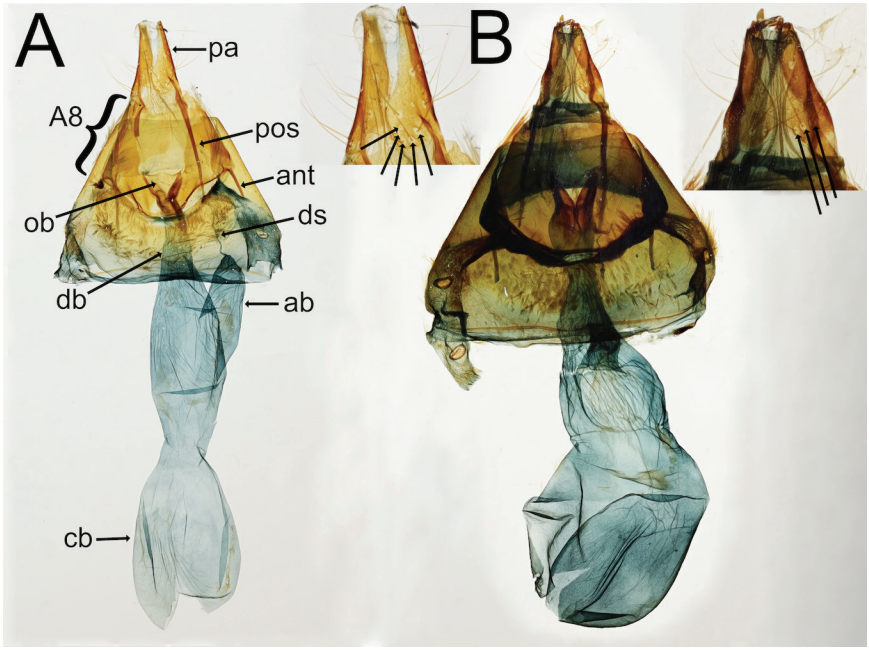

Figure 3. Female genitalia. Insets of magnified papillae anales denote distinct setal arrangements in each species. **A.** *Haliophyle maipahi*, paratype. K.A. Austin diss. #1526 (BPBM). **B.** *H. maio*, paratype. K.A. Austin diss. #1511 (UHIM). Abbreviations: *pa*, papillae anales; *A8*, 8th abdominal segment; *pos*, posterior apophysis; *ob*, ostium bursae; *ant*, anterior apophysis; *db*, ductus bursae; *ds*, ductus seminalis; *ab*, appendix bursae; *cb*, corpus bursae.

slightly following curvature of the head, fringed ventrally with long, rusty-orange scales. Third segment small, extending anteriorly from the distal apex of the second segment, dorsal portion mottled with short pale yellow and grey scales, ventral portion with short scales of similar rusty-orange coloration. ***Thorax***. Dorsum of prothorax and mesothorax covered by broad, pale-yellow scales, largely obscured by longer, thin, rusty-orange scales, roughly concolorous with forewing and head; lateral margin with long, thin, dark brownish-grey scales. Metathorax clothed in shaggy, dull brownish-beige scales. Ventral side of pro- and mesothorax with long, fur-like, dull brown scales with slight orange highlights. Venter of metathorax covered in fluffy, dull brownish-beige scales. Forewing (Fig. 1A, B) with forewing length 14.2–14.5 mm, dorsal surface with ground color rusty orange, antemedial line and subterminal area shaded by brownish-grey scales. Costa, posterior margin, fringe, and veins entirely covered with dark brownish-grey scales. Antemedial line with dark brownish scales towards posterior wing margin, lighter, burnt sienna scales on toward costal wing margin, connecting with similarly colored postmedial line to form a subquadrate area along 1A+2A, not reaching posterior margin. Postmedial line distinctly bent toward base of forewing near costa. Orbicular spot a small white speck or

absent; reniform spot present as a curved, bow-shaped white streak closely tracing distal margin of discal cell, with distal portion lined with grayish-brown scales blending out into rusty orange; claviform spot absent. Subterminal area with pale brown scales intermixed with light orange scales; terminal area with light orange scales, nearly yellow along subterminal line. Fringe with scales dark brownish grey, with a few intermixed pale-orange scales. Dorsal surface of hindwing pale brown, paler at costal margin. Ventral surface of forewing with shaggy, thin scales in discal cell, ground color pale orange to beige, darker scales present along veins. Ventral surface of hindwing pale brownish beige. Lateral and ventral surfaces of legs with scattered brown and orange scales. Dorsal surface of legs with lighter orange scales. Hindleg femur and tibia with dorsal scaling pale orange, almost off-white, tarsi orange. Submedial and terminal spurs with scattered brown and beige scales. ***Abdomen.*** Dorsum of abdominal tergites lined with fur-like, greyish-beige scales, lateral margin with tufts of fluffy, pale orange-beige scales. Distal end of abdomen with fluffy, pale beige fur-like scales, forming an anal brush. Venter clothed in shaggy, dark brownish-grey scales. Male genitalia (Fig. 2A) with uncus long, slender, strongly curved ventrally, apically acute; tegumen slender, nearly confluent from base of uncus, long tufts of setae situated at ventral margin; juxta cup-like, small, short and laterally compressed; sacculus well-developed, large, roughly congruent to the valva, knife-like, tapering off to a point at pollex, situated behind valva, extending dorsally just beyond; basal end of sacculus with horn-like projection, clasper and dorsal process knife-like in appearance, upturned and apically acute. Valva claw-like, apically acute, downturned, extending into a small, spine-like protrusion. Saccus slender and tapered. Phallus cylindrical, 4× long as wide, without observed cornuti or any extraordinary structures; vesica not everted.

Female (n=1). ***Head.*** Coloration similar to male but deeper reddish orange, first and second segment of maxillary palpus lined ventrally with dark, brownish-copper scales; third segment slightly longer and more slender than in male. Scales on the frons and vertex deeper copper-orange. Antenna with shorter sensillae. ***Thorax.*** Thoracic segments and wing coloration slightly darker than male. Forewing slightly larger (forewing length: 15.0 mm), similarly patterned but with three more conspicuous patches of white at distal end of the costal margin; fringe deep reddish orange, apices white; and basal line more conspicuous. Legs and venter deeper copper coloration. ***Abdomen.*** Abdomen less shaggy than in male; venter with darker brown coloration. Female genitalia (Fig. 3A) with papillae anales long, conical, acute, with long, annularly arranged setae. Apophyses posteriores slightly longer than length of A8, apophyses anteriores slightly shorter than length of A8 (partially broken in genitalia slide); ostium bursae V-shaped; ductus bursae narrow, nearly confluent with corpus bursae; appendix bursae and ductus bursae about 2× long as wide; ductus bursae relatively short, thread-like; corpus bursae elliptical, elongate, without signum.

Etymology. From the Hawaiian words "ma'i" (pronounced "mah-ee"), which translates to genital, and "pahi" (pronounced "pah-hee"), which translates to knife, cutlass, or sword, to which the male genital structures bear a likeness. It is to be treated as a noun in apposition. The intended pronunciation is "mah-ee pah-hee".

Comments. This species is only

known from four specimens, all collected between 1915 and 1965. Despite many surveys specifically targeting nocturnal Lepidoptera on Ka‘ala over the past 20 years, we have not encountered this species and fear it may be extinct. Nothing is known of its life history.

***Haliophyle maio,* sp. nov.** Paynter-Tavares & Austin
Figs 1C, D; 2B; 3B
https://zoobank.org/NomenclaturalActs/fb87e8e4-281e-4295-8ead-5be19e915cdc

Diagnosis. *Haliophyle maio,* **sp. nov.**, is very similar to *H. maipahi,* **sp. nov.** However, *H. maio* is larger (forewing length 16.4–16.7 mm) than *H. maipahi* (forewing length 14.2–15.0 mm). The antemedial and postmedial line extends from the costal margin to meet at the posterior margin in *H. maio,* forming a subtriangular shape (Fig. 1C, D), as opposed to being subquadrate and joining at vein 1A+2A as in *H. maipahi* (Fig. 1A, B). In the male genitalia, the sacculus of *H. maio* (Fig. 2B) is much shorter than in *H. maipahi* (Fig. 2A) and the clasper is curved and minutely forked. Female genitalia of the two species are exceedingly similar, but the anterior setae of the papillae anales are situated in two roughly-latitudinal rows in *H. maio* (Fig. 3B) as opposed to the annular arrangement of *H. maipahi* (Fig. 3A). However, with so few female specimens known, it is difficult to know the variability of this character.

Type material. Holotype. Moloka‘i: ♂, Kamakou Pres[erve].; P[ēpē‘ō]pae Trail; UV light, V-19-04 / UHIM2015.23021 (UHIM). Paratypes (10♂♂, 3♀♀,). Moloka‘i: 1♂, [same data as holotype] / UHIM2015.23110 (UHIM). 1♂, [same data as holotype] / UHIM2015.23024 (UHIM). 1♂, P[ēpē‘ō]pae Bog Trail, “Kamakou 4”; VII-6-05; D. Rubinoff (UHIM). 1♂, [same data as previous] / UHIM2015.23019 (UHIM). 1♂, [same data as previous] / UHIM2015.23020 (UHIM). 1♂, Kam[a]kou; Preserve, Board walk to P[ēpē‘ō]pae Bog; 19-V-2003, Voucher AP001; *Haliophyle* sp.1 MOL / UHIM2015.13141 (UHIM). 1♂, [same data as previous except AP002] / UHIM2015.13143 (UHIM). 1♂, [same data as previous except AP003] / UHIM2015.13142 (UHIM). 2♂♂, Kamakou Preserve, Pēpē‘ōpae Bog Boardwalk; 21.1183, -156.9041; 1230 m; 11–12 v 2021; K. A. Austin, C. Doorenweerd, D. Rubinoff; UV/LED bucket trap / DNA extraction KA1058 / K. A. Austin diss. #1433 (UHIM). 1 ♂, HAWAIIAN IS.; Moloka[‘]i I., 1180 m.; Pu[‘]u Kolekole Cabin; 14-I-1974 / At light / F. G. Howarth; Collector; BISHOP / S. L. Montgomery; Collector (BPBM). 1♀, S. L. Montgomery; Collector / above Pu[‘] u Kolekole; 4400’ [1341 m]; 1-IX-78 / K. A. Austin diss. #1511 / UHIM2015.23018 (UHIM). 1♀, HAWAIIAN ISLANDS; Moloka[‘]i I. 6 mi. E; Pu[‘]u Kolekole, Honomuni; 2900’ [883.92 m]. 18-VII-1979 / S. L. Montgomery; Collector (BPBM). 1♀, HAWAIIAN ISLANDS; Moloka[‘]i I. 1 mi. N; Pu[‘]u Kolekole, 4000’ [1219.2 m]; 26-VII-1979 / S. L. Montgomery; Collector (BPBM).

Description. Male (n=11). ***Head.*** Frons covered in undercoat of pale beige, shaggy scales with reddish-brown apices. Vertex nearly concolorous with frons, but slightly paler. Antenna filiform, pale yellowish orange, ca. 0.8× length of forewing, setae present ventrally, porrect, ca. 2× length of dorsal scales. Scape with pale-yellow and red-orange scales, off-white dorsal scales forming distinct stripe extending to apex. Eye hairy, ocellus present. First and second segment of labial palpus entirely covered in shaggy pale-yellow undercoat with copper overcoat. Ventral portion of first segment with long, hairlike, scales blending from pale yellow to brownish grey. Second segment length 2× width,

upcurved, fringed ventrally with long, brownish-orange scales. Third segment small, extending anteriorly, perpendicular to second segment, dorsal portion with short pale-yellow and orange scales, ventral portion with darker rusty-orange scales. ***Thorax.*** Prothorax and mesothorax with shaggy pale-orange scales tipped with copper-orange, roughly concolorous with forewing and head. Lateral margins of tegulae with dark brownish-grey scales. Posterior of mesothorax with tuft of orange scales. Metathorax with shaggy, pale-beige scales. Venter of pro- and mesothorax with long dull-brown scales and slight orange highlights. Venter of metathorax with fluffy, dark orangish-brown scales. Forewing (Fig. 1C) length 16.4–16.7 mm, dorsum with ground color scaling coppery reddish-brown. Costal margin lined with light yellowish-beige scales, with three or four small patches of light yellowish-beige scales between postmedial and subterminal lines. Scaling along veins entirely dark brownish grey. Antemedial line light beige, with broad, dark brownish band of scales along interior margin, fused with similarly colored postmedial line at 0.5× length of posterior margin to form subtriangular area extending to posterior margin. Postmedial line distinctly bent toward base of forewing near costa. Orbicular spot small white speck or absent, reniform spot present as a curved, bow-shaped white streak closely tracing distal margin of discal cell, with distal portion lined with grayish-brown scales blending into rusty orange. Claviform spot absent. Basal line pale, mostly obscured. Subterminal line distinctly pale yellow, somewhat irregular; subterminal area deep reddish orange, heavily suffused with brown scales in some specimens. Terminal area covered with rust-orange scales. Fringe with intermixed red-orange and dark-brown scales. Dorsal surface of hindwing pale brown or beige, fringe shaggier at the posterior margin and basal portion of the hindwing, light reddish orange or pink. Ventral surface of forewing pale brownish to beige in coloration, with darker scales outlining venation. Costal, outer, and posterior margin of forewing lined with dark brownish-grey scales. Ventral surface of forewing with shaggy, thin scales in discal cell, ground color pale orange to beige, darker scales present along veins. Legs with scattered brown and orange scales laterally and ventrally. Dorsal and medial surfaces of legs with lighter orange scales. Dorsum of hindleg femur and tibia pale orange, almost off-white, tarsi orange. Submedial and terminal spurs with scattered brown and beige scales. ***Abdomen.*** Abdomen dorsally clothed with fur-like, ground color pale orange-beige scales; medial patch of pale orange-beige scales tipped with brown-orange narrows as it extends from base to A8. Distal end of abdomen with fluffy, pale beige fur-like scales forming anal brush; venter clothed in shaggy, dark copper-brownish scales. Male genitalia (Fig. 2B) with uncus long and slender, strongly curved ventrally, tapering apically to sharp point; tegumen slender, nearly confluent with base of uncus, almost entirely lined by setae; juxta roughly canoe-shaped, short and laterally compressed; sacculus slender and short, broadly triangular on dorsal margin; sacculus with prominent horn-like projections basally; claspers dorsally curved, distinctly finely furcated; dorsal process not apparent, ventral process present; sacculus pointing posteriorly at apex; valva well developed, long and slender; apex of valva extending dorsally into a small, spine-like protrusion; saccus relatively wide and rounded. Phallus nearly straight, around 5× long as wide, without observed cornuti or any notable structures; vesica not everted.

Female (n=3). ***Head.*** Coloration similar

to the male, but with first and second segment of labial palps lined ventrally with lighter yellow-orange scales; third segment slightly longer and more slender. Scales on the frons and vertex slightly lighter in shade than in male, but possibly due to aging or specimen storage conditions; sensillae on antennae shorter. ***Thorax.*** Coloration of thoracic segments and wings nearly identical to male. Forewing similar in size (forewing length 16.5–16.7 mm), patterning, but lighter in color and with less contrast (Fig. 1D). Legs and venter with similar coloration to the male with less color contrast between light beige scales and darker orange scales. ***Abdomen.*** Terminal segment acute, less shaggy than in male; venter lighter in coloration with dark browns and scattered pale orange. Female genitalia (Fig. 3B) with papillae anales conical, tapered, with long, widely spaced setae; apophyses posteriores long, straight, slender, ca. same length as A8; apophyses anteriores similar, but slightly shorter; ostium bursae well sclerotized, V-shaped; ductus bursae relatively short, ca. 2× long as wide; appendix bursae and ductus seminalis concealed by ductus bursae and A8 in figure, appendix bursae short and stout; corpus bursae calabash gourd-shaped, membranous, without signum.

Etymology. The Hawaiian word "ma'i" (pronounced "mah-ee") translates to genital, whilst "o" is derived from the Hawaiian "'ō" (pronounced "oh"), translating to the act of piercing or stabbing, specifically with forks, spears, etc. This species has forked claspers and sharp protrusions on the male genitalia that look capable of piercing. It is to be treated as a noun in apposition. The intended pronunciation is "mah-ee-oh.".

Comments. Despite this species being still extant on Moloka'i, it is not as common as other species of *Haliophyle* (all undescribed) in the localities it has been collected. Therefore, we believe that the same threats that led to the decline of its presumed sister species, *H. maipahi* on O'ahu, may threaten *H. maio* on Moloka'i. Efforts should be made to identify the host plant(s) of *H. maio* to better understand its biology and potential distribution and prevent its extinction.

Discussion

Despite extremely similar external characters between the two newly described species, there are clear characters in the male genitalia to easily separate them. This is consistent with the observations of Zimmerman (1958) across *Haliophyle*. Many undescribed species of *Haliophyle* await attention and much remains to be learned about their biology, conservation status, and threats. Even on relatively well-surveyed islands such as O'ahu, there remain large, colorful moths that have yet to be described. Perhaps this is a testament to these moths' elusive nature, the consequences of native habitat degradation on the islands, or the lack of resources dedicated towards understanding endemic insect diversity.

The prospect of sympatric speciation in *Haliophyle* and nearly identical external morphology suggests that DNA sequencing could be helpful for decoding their phylogenetic relationships; however the available specimens at the UHIM were over half a century old, and it is likely that *H. maipahi* is now extinct. Continuing to revisit and attempt to sample these species, especially *H. maipahi*, at the original collection localities could be useful for verifying their population status and collecting more specimens for future, more detailed redescriptions and DNA vouchers if they still happen to be extant.

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